(12) UK Patent Application (19) GB (11) 2 109 137 A

(21) Application No 8224504
(22) Date of filing 26 Aug 1982
(30) Priority data
(31) 8126023
(32) 26 Aug 1981
(33) United Kingdom (GB)
(43) Application published 25 May 1983
(51) INT CL³ B41J 3/44
(52) Domestic classification G4H 13D 14B 14D 1A GM TD U1S 2291 G4H
(56) Documents cited GB A 2041596 GB 1365263 WO A 8002613
(58) Field of search G4H

(71) Applicants Taylor Nelson Medical, (Great Britain), 457 Kingston Road, Ewell, Epsom, Surrey KT19 0DH.

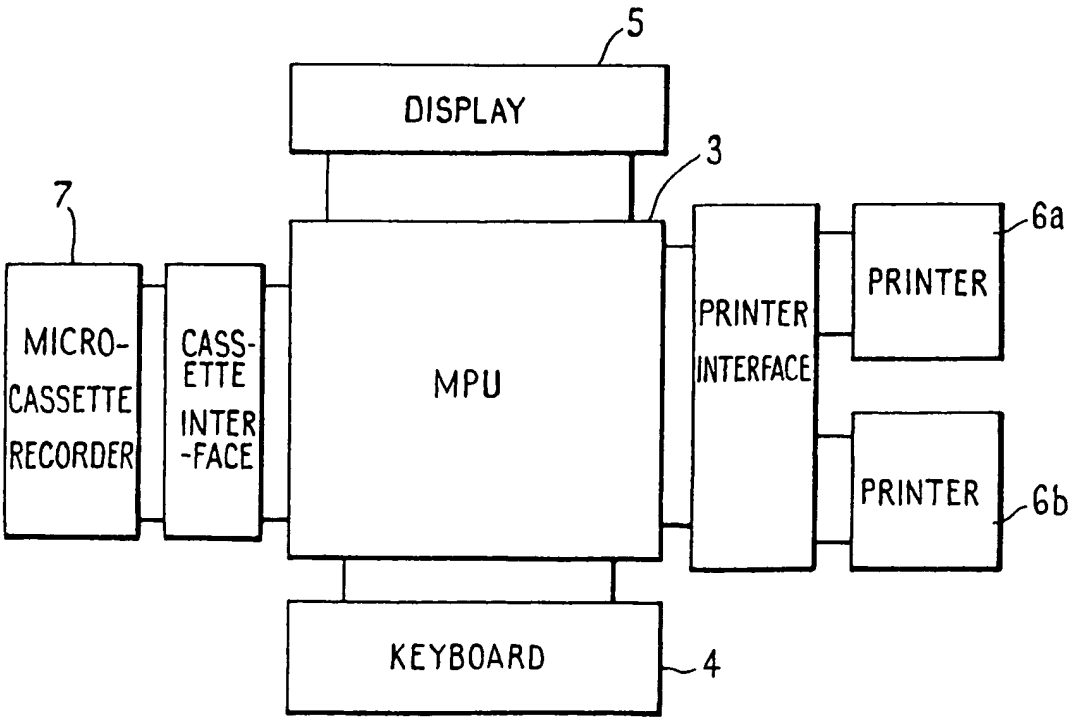
(72) Inventors Hugh Stammers, Paul Shimell.

(74) Agent and/or Address for Service J.A. Kemp and Co., 14 South Square, Gray's Inn, London WC1R 5EU.

(54) **Data logging and label printing device**

(57) A combined data logging and label printing device comprises a computer processing unit 3, programmed to drive the various functions of the device, a keyboard 4 for use by the user to input data and interact with the processing unit, a display 5 for displaying the text input by the user and which is to be printed using one of two printers 6a and 6b on label stock and a micro cassette recorder 7 acting as a non-volatile memory for storing data relating to each prepared label. The printers may carry labels which are marked by colour or other marking to distinguish between, say, poisonous and other products. The processing unit 3 is programmed so that unless the user gives instructions to the contrary, a label will normally be printed on one of the printers unless he or she specifically instructs the other printer to be used. The printer normally used can be selected by the user during the start up routine of the device so as to even out wear on the two printers.

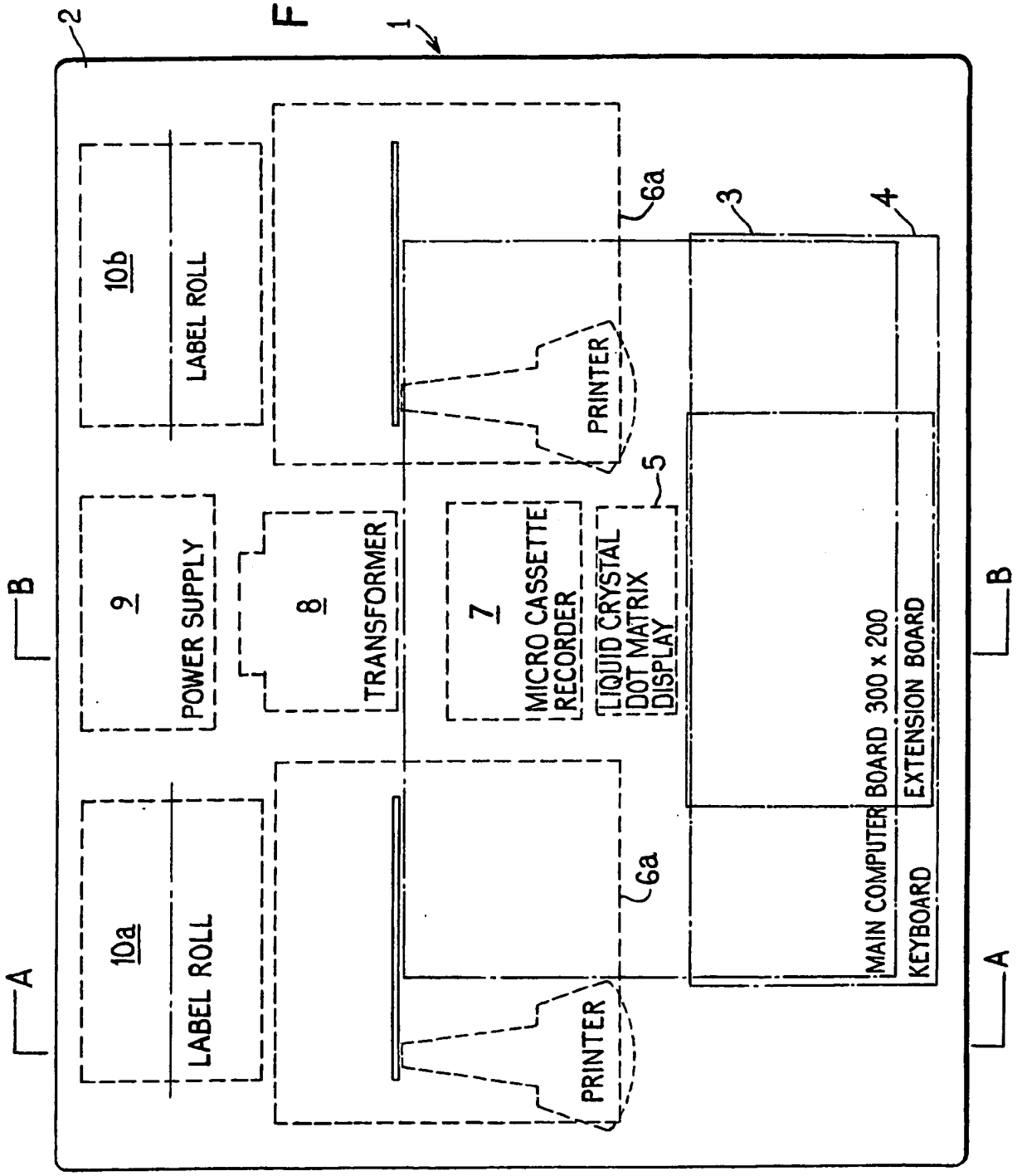
FIG.4



GB 2 109 137 A

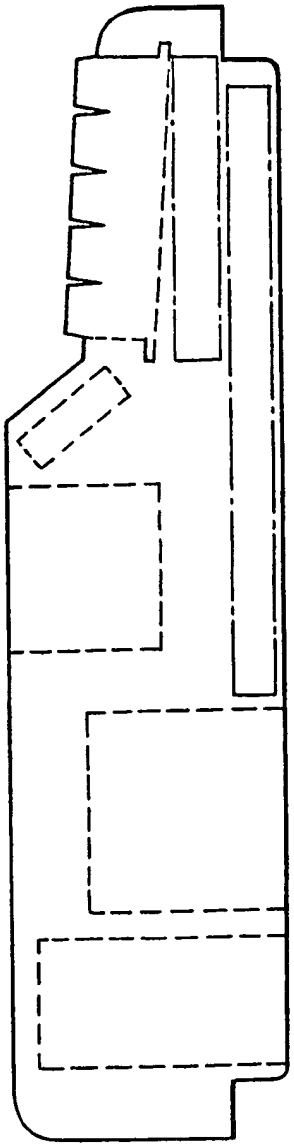
The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

FIG.1


2
1
10b
LABEL ROLL
9
POWER SUPPLY
8
TRANSFORMER
7
MICRO CASSETTE RECORDER
LIQUID CRYSTAL DOT MATRIX DISPLAY
5
PRINTER
6a
3
4
10a
LABEL ROLL
PRINTER
6a
MAIN COMPUTER BOARD 300 x 200
EXTENSION BOARD
KEYBOARD
A
B
A
B

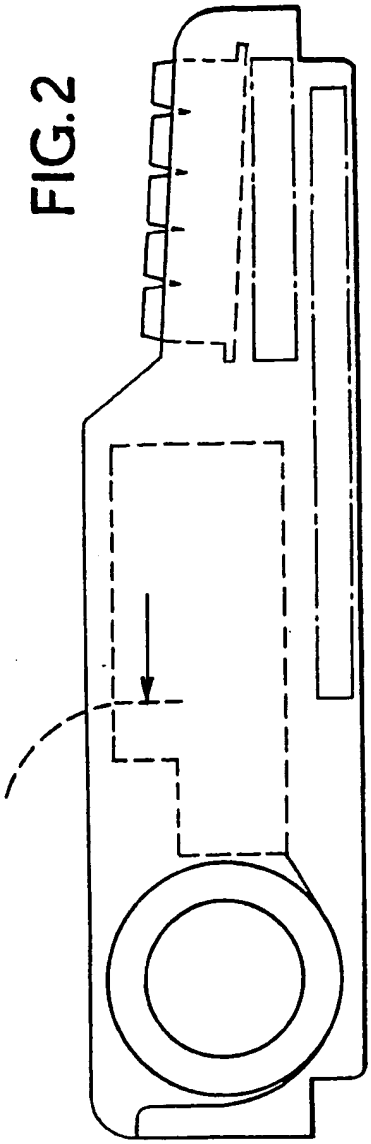
2109137

FIG.3



B—B

FIG.2



A—A

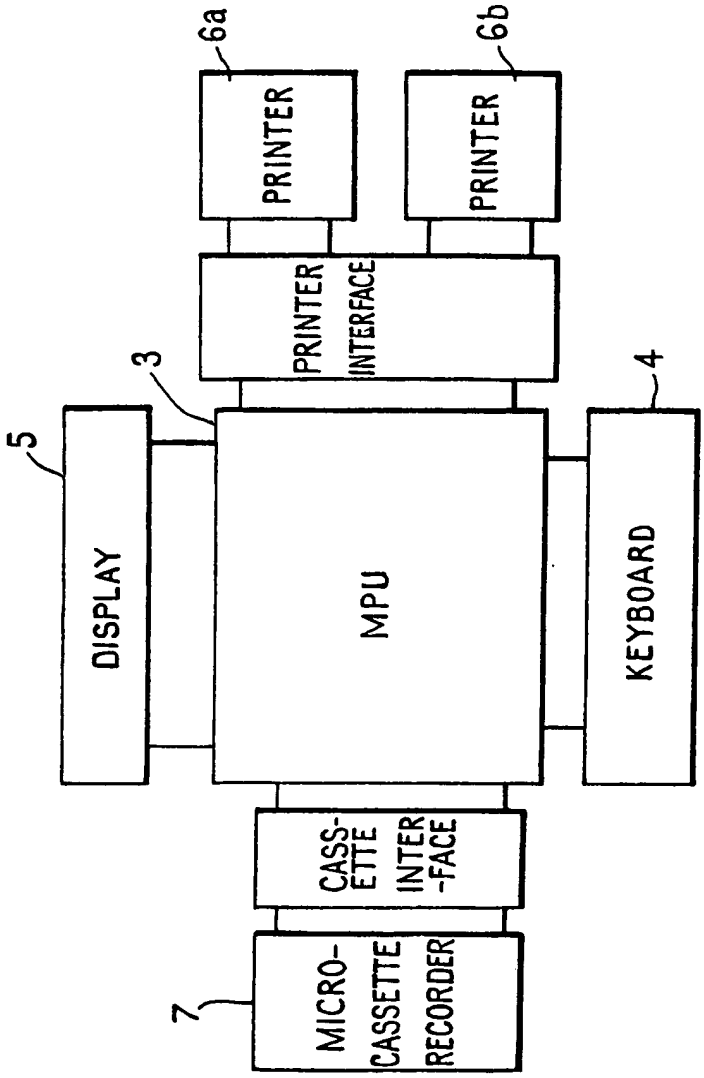

6a
PRINTER
6b
PRINTER
PRINTER INTERFACE
3
4
5
DISPLAY
MPU
KEYBOARD
CASS-ETTE INTER-FACE
7
MICRO-CASSETTE RECORDER

FIG.4

SPECIFICATION

Data logging and label printing device

The present invention relates to a combined data logging and label printing device.

In many applications it is desirable for products to bear individual labels printed indicating their composition or manner of use and to compile data, for example for stock control, accounts and other record purposes relating to the labels which have been printed. One particular application is in chemists or pharmacists where it is desirable to prepare labels for drugs and other medications and various other items, the label showing the recommended dosage and/or manner of use and identifying the item. At the same time for various reasons it is desirable to compile a record of various data relating to each item which is dispensed. This data can be used for stock control and accounting purposes and also to take account of prescription charges, etc.

Broadly, the present invention provides a combined data logging and label printing device in the form of a self contained unit which has a computer processing unit (MPU) for interacting with the user to set up the data for a particular label, a printing arrangement for printing the labels and a data logging arrangement for storing data relating to each prepared label in a non-volatile memory. Preferably the device comprises a keyboard for enabling the user to enter data for the preparation of individual labels and instructions to the microprocessing unit and a display for verifying entered data.

Different types of labels, for example labels of different colours may be required for example in a chemists application where red labels might be desirable to indicate poisons. Preferably the printing arrangement comprises a pair of printers for printing on labels from respective supplies of label stock, in use individual labels being printed on a selected one of the printers. As one type of label stock may be used much more frequently than the other, the printer printing labels from the default stock may be changed from time to time. For example the MPU may be programmed to have a start up routine in which the user selects one of the printers for the default stock.

As far as the data logging function is concerned, it is envisaged that data would be compiled over a period of time, say, for example, a week and then be transferred to a central location for processing. For example a number of chemists could be provided with devices and there could be a central place which periodically receives data from them to compile the necessary records. The data logging arrangement in the device should, of course, be of a capacity sufficient to accommodate the data collected before it is "dumped" to the central point and this memory should also be non-volatile. The presently preferred storage is a type of digital micro-cassette which provides non-volatility and also ease of use under control of the MPU. Various other forms of non volatile memory could of course be used such as magnetic discs, e.g. floppy discs, audio cassettes, semi-conductor memories, memories and the like although to provide sufficient storage capacity at an economic costs for use in a chemists application, the digital micro-cassette is presently preferred.

It is important in some applications such as the preparation of drug labels that the labels are clearly printed and we presently prefer, therefore, to use a sprocket-fed impact printer for each of the two printers in the printing arrangement. Impact printers also have the advantage of not requiring special printing stock, unlike thermal printers.

The invention will be further described, by way of example, with reference to the accompanying drawings in which:

Figure 1 is a schematic plan view of one embodiment of the invention;

Figure 2 is a section on A-A in Figure 1;

Figure 3 is a section on B-B in Figure 1; and

Figure 4 is a block diagram of the logical connection of the hardware of the device of Figure 1.

As shown in Figure 1, the device 1 is in the form of a self-contained unit comprising a housing 2 of suitable materials such as plastics and containing all the functional parts of the device. The principal functional parts are:-

A main computer board 3 having a microprocessor and suitable support clips mounted thereon and an extension board with additional support chips thereon the board 3 may carry or have associated with it an amount of non-volatile RPM in which user-set data (e.g. frequently used names and addresses and so forth may be stored. Such a facility may be provided by a battery backed CMOS RAM with a charging circuit to recharge the battery during mains operation;

A keyboard 4 to the normal QWERTY layout and having control keys to enable the user to set up the data for a particular label to be printed and also to give instructions to the microprocessor unit;

A dot matrix type liquid crystal alphanumeric display 5 which displays the text entered by the user for printing on the label, as well various other data which may be stored by the MPU and also displays messages from the MPU to the user;

A pair of sprocket fed impact printers 6a and 6b for preparing the labels;

A micro-cassette recorder 7 which is used for data logging;

A mains transformer 8;

A power supply 9; and

Two label stock rolls 10; and 10b.

input from the keyboard and to control the display 5, printers 6a and 6b and micro-cassette recorder 7 and carry out the various labelling, data logging and other functions described below.

The keyboard 4 may be of any suitable type for example one of those which produces a ready encoded ASCII strobed parallel output encoded serial output, or it may simply comprise an array of contacts which are scanned and debounced by the MPU.

The printers 6a and 6b are preferably forty character per line printers of the DP 824S type made by Star of Japan and the micro-cassette recorder 7 is preferably of type MD3 also made by Star.

The following is a description of the functions which the MPU 3 may be programmed to provide when applying the device to the preparation and logging of labels in a chemists.

This section is concerned with the way the system appears to work from the point of view of an operator or any external equipment. It is not concerned with how this is achieved.

The principal areas of concern are the formats of labels and of captured data, the information presented to the user and the actions he is expected to carry out.

The system will recognise certain short forms of popular drug names and common dosage information. These abbreviations may be entered by the chemist via the keyboard 4 but are printed in full on the label. The form in which the drug is dispensed (e.g. tablets, cream, syrup, etc) is also entered by the chemist as an abbreviation.

The device 1 incorporates two print mechanisms 6a and 6b intended to allow both black and red (for poisons) label stock to be loaded at the same time. In practice the red label stock is likely to be much less often used and the chemist is therefore recommended to vary which one of the two mechanisms which will print the default stock. In consequence, part of the start up procedure which must be carried out after switching on the unit is to ask the chemist to specify whether the left 6a or right hand printer 6b contains the black labels.

In order to load labels into one of the printers printer, or to adjust the position of the first line of print, the sprocket feed mechanism must be operated. This can be done via the keyboard during start up, or following a label wreck, or just before printing in the event of the label roll running out. Also a dummy label can be printed to enable the user to check label alignment.

Labels can only be printed when all the data has been entered.

The labels used are pre-printed, in black or red, with a chemist's logo, address and other details. Sufficient area preferably exists for printing up to six lines of information, each line containing a maximum of twenty-five characters.

Preferably, the device 1 has the facility to prepare five types of labels, namely standard labels, statistics labels, price-tickets, free text labels and dummy labels. Examples of the format and use of these are given below, these examples are purely illustrative and many other formats and uses are possible.

The first line contains the prescribed drug name and optionally its strength and form. The drug name is printed wholly in upper case characters and is contained within the line. The next four lines contain the specific dosage intructions in full. Key words or characters may be printed in upper case. The final line contains the patient's name and the date on which the drug was dispensed. For example:-

	30 Caps
AMPICILLIN 250 mg Capsules	
TWO to be taken THREE TIMES	
DAILY before food	
Mr. A. Malady	10 Apr 81
THE CHEMIST	Tel: 72047
Mill Lane, Taplow, Berks.	

The quantity can be printed optionally above the drug name line. The positioning of the quantity and/or date information can be varied. Similarly, in a variant, additionally a serial number may be printed. In such cases the serial number can be printed where the date currently appears and the date is then printed on the last seven characters of the last dosage line.

Using red label stock, 'For External use only' may be pre-printed on the top line of the label. Some embodiments may allow the user optionally to select the cautionary message to be printed by the machine.

Statistic Labels

During the start up procedure or during normal running, the chemist may invoke an alternative to the program for printing standard labels. The machine is programmed to maintain counts of the labels dispensed within its memory and on the tape. The chemist may, therefore, print a label containing statistics relating to the dispensing information.

The following illustrates the layout of one version of a statistics label.

Date: 10 Apr 81	Forms	Items
Paid	26	32
Non paid	14	18
Exempt	12	14
Contraceptive	28	40
(12X) TOTAL	70	104

THE CHEMIST Tel 72047

Mill Lane, Taplow, Berks

Facilities may exist within the program for clearing and/or adjusting this statistical information so that the chemist can maintain accurate daily and monthly dispensing statistics.

The information printed may include the data of the first and last recorded labels plus the following totals:

* number of scripts (prescriptions)
* number of scripts exempt from charges
* number of labels
* number of scripts issued by a GP
* number of scripts issued by a dentist
* number of scripts issued by a hospital
* number of scripts issued by a private organisation
* number of scripts issued by another authority

Price Tickets

Another routine programmed into the machine is to provide an alternative to the standard label routine is that the chemist can use the device for printing price tickets for any product lines he wishes. These price tickets can be dated and include the industry code for the product being priced. Each price ticket is " x " and separate rolls of these tickets are produced with rows of six labels across. Thus:-

333336	333336	333336	333336	333336	333336
5.99	5.99	5.99	5.99	5.99	5.99
10 Apr 81	10 Apr 81	10 Apr 81	10 Apr 81	10 Apr 81	10 Apr 81

The chemist can optionally specify whether the date or the industry code for the item (e.g. 333336) is printed on the label. Additionally, the chemist specifies how many price tickets should be printed for a specified price.

Free Text Labels

These may be made available when the dispensing label format is not wanted (e.g. for patient's addresses). After a special character is entered to a specific prompt, the device becomes a typewriter which can print 27 characters on 6 lines of each label.

Dummy Labels

A dummy consists of six lines of characteris, predefined by the machine, used to check the correct positioning of the label stock in the printing mechanism.

Obviously, in the normal course of operation, the standard label format is used, with data being entered by the user via the keyboard. The preparation of statistics labels may be initiated via the keyboard, to data for each label being compiled by the MPU 3. The dummy label option may be selected via the keyboard e.g. during start up to check label alignment.

The micro-cassette recorder 7 can use both sides of a cassette tape. One possible tape format for data logging is as follows:-

Tape Format

Each side of a cassette tape is treated logically as though it were a separate tape volume. Each recorded tape volume has the following logical format:

Volume Label Record - This contains a unique volume identifier, a count of the number of times the tape has been used, and a flag to indicate whether this is a "scratch" tape i.e. available for re-use.

Tape Mark
Header Record - The type of header record present identifies the use of the tape e.g. label data, test program etc.

Tape Mark
Data Records - There may be several types of data record present on a tape, depending on its use.

EOT (End of Tape) - This consists of two consecutive standard tape marks. Any data recorded beyond EOT is invalid and was probably written during a previous use.

The tape format was designed with the following points in mind:-
A tape can be "scratched" after processing without destroying any data records. This can therefore be done in a single pass with recovery possible in the event of a subsequent error.
Each physical tape unit can be monitored by the central processing facility so that, for example, it can be withdrawn before its life expectancy is up.
Tapes may have a variety of uses other than recording labels.

Record Formats

Each record tape is distinguished by its first byte which contains one of the characters A through Z. All the data in every record consists of printable characters.

Volume Label Record

This record contains 40 bytes, starting with the letter V. If the second byte of this record contains the letter S then this is a "scratch" tape and the entire record will be re-written with this byte changed to a space character when it is loaded into the secondary device.

The remainder of this record contains a tape serial number of various statistical information, such as the number of times the tape has been issued. None of this information is processed by the MPU 3.

In the event of a tape being read which does not begin with a Volume Label Record, the MPU 3 will write a dummy record containing all space characters and the tape will be treated as a "scratch" tape.

Header Record

This record is also 40 bytes long, unused bytes being space filled. Two types of header record have currently been identified.

If the first byte contains the letter H then the tape is being used for recording chemists labels. In this case the next four bytes will contain the chemists' number and this is followed by a four number identifying the device 1 and the data of the first recorded label (six digits).

If the first byte contains the letter P then the tape contains a program which the MPU 3 will automatically load into its random access memory and execute. The facility may be included to assist the testing of the device 1 during production and subsequently. It can also be used for general applications.

Data Records

The maximum length of a data record is constrained by the cassette controller to be 256 bytes.

Program data records will contain a printable form of hexadecimal data, such as TEKHEX for example. The format of these records is not currently defined.

Label data records begin with the letter L and contain information relating to one or more chemist labels. The second byte contains a digit representing the number of labels in this block (maximum value, 3). The next six bytes contain the date on which the labels were printed in the form ddmmyy.

Each label in a label data record consists of a number of fixed length fields. These are, in order:

FIELD NAME	NO. BYTES	CONTENTS
SERIAL NUMBER	4	machine generated prescription count
MULTIPLE LABEL COUNT	1	for multiple item perscriptions, range 1 - 9
SOURCE	1	digit representing GP, hospital etc.
AUTHORITY	1	digit representing doctor, receptionist etc.
DOCTOR'S NUMBER	7	currently blank
BRAND	20	name/abbreviation
STRENGTH	5	alphameric (e.g. 250 mg)
FORM	2	numeric
QUANTITY	5	numeric, includes decimal point
PACK SIZE	4	numeric
DOSAGE	8	dose abbreviation
GENERIC DRUG	20	name as entered

Two conditions are detected by the MPU 3 which require the user to replace the cassette or to turn it over. The appropriate message is displayed.

In the event of the unit displaying the following message:

**TAPE FULL THIS SIDE

the user should turn over the tape if the other side has not been used, or insert a new tape.

If an irrecoverable error is detected by the unit while trying to read or write the tape (or if no tape is loaded), the following message is displayed:

**TAPE ERROR, PLEASE REPLACE

and the user should try a new tape or check that a tape has been correctly inserted. Repeated occurrence of this message with several tapes indicates a malfunctioning device 1.

When a tape has been turned or changed, following either message, the user should hit ENTER on the keyboard 4 and wait for the system to respond with the next message.

System Operation

General

Each input of data by the user is requested by a prompt on the device display 5. Usually the prompt is in the form of a question. There are a number of ways in which the user can reply.

As far as possible, the number of keystrokes is minimised. The following functions are required:-

√	signifies a key designated to means YES
X	signifies a key designated to mean NO
Enter	signifies a key used to depart from the sequence of operations
Cancel	signifies a key used to abandon the current label input - this may be used in reply to any prompt

Backspace	signifies a key which will delete the last character typed by the user which is currently on the display - it can therefore be used to correct typing errors as they occur but only on the current input line.
Clear	signifies a key which will free the keyboard after it has become inoperable following an input error detected by the system.

In general, if an input error is detected the system will stop accepting characters from the keyboard 3 and displaying them until CLEAR is used when the original prompt will be re-displayed.

The operational flow of the system is presented in the remainder of this section in the form of a hierarchical sequence of steps. Each step corresponds to a system prompt and shows the allowable responses, any special action performed and the consequent next step.

This procedure is obeyed each time the system is switched on. Embodiments may vary in the complexity and sophistication of procedures invoked in this start up routine. One example of the routine is as follows.

Step	Prompt	Reply	Action	Next
200	TODAYS DATE:	ddmmyy	Enter date	300
300	Scripts?	√	Prescription labelling	330
		X		310
310	Ticketing?	√	Price Ticketing routine	3000
		X		300
330	Adjust left printer?	√		3000
		X		340
340	Adjust right printer	√		2100
		X		400
400	Black on left?	√		410
		X		500
410	Print date?	√	Here if scratch tape only	420
		X		420
420	Print Quantity?	√		430
		X		430
430	Chemist No?	√		400
		X		400

Label Processing

This procedure is entered after start up and is repeated from each new prescription processed. Where a prescription requires several labels the multiple label count is decremented as each label is printed and the procedure returns to step 700 until the count is zero.

The following is one example of this routine. Models vary in the way this routine operates. Drug names may be either entered in full or by using one of the abbreviations held in the machine's memory which is subsequently printed in full on the label. Machines may vary in the number of abbreviations which they hold. Currently their range would probably be from 50 to 800 products. Some versions may take advantage of the CMOS memory to provide the facility to the chemist for adding abbreviations of his own choice.

Step	Prompt	Reply	Action/Note	Next
500	SOURCE:	1 ch		510
510	EXEMPT?	√		520
		X		520
520	AUTHORITY	1/3 ch		600
600	PATIENTS NAME	26 ch	Enter name	700
		ESC	Multiple labels	610
610	HOW MANY LABELS:	d	Max.9	600
700	FORM:	1/2 ch		710
710	DRUG NAME:	25 ch	Abbreviation or full name. Use of '@' symbol automatically prints previously entered form	800
800	DOSAGE:	107 ch	Abbreviation and/or free text	900
900	QUANTITY/PACK SIZE:	≤ 8 ch 8 ch		1000
1000	IS NAME GENERIC?	√		1010
		X		1100
1010	BRAND USED:	≤ 25 ch		
1100	PRINT BLACK	√	Prints black	1200
		X	Prints red	1200
1200	OK?		Record on tape	500/700
		X		1300
		ESC		1250
1250	HOW MANY DUPLICATES?	d	Enter maximum of 9	1200
1300	VERIFY?	√	See note blow	-
		X		1310
1310	ADJUST PRINTER?	√		2000
		X		1200

In the vertification routine each element of the label is displayed, if 'YES' is given in response the entry remains unchanged; if 'NO' is given in response the respective prompt is redisplayed and the required information re-entered.

Printer Adjustment

This procedure is entered to reload either printer mechanism with a label roll of dispensing labels or price tickets, to adjust the position of the first line of printing on a label or to allow labels to be reprinted in the event of a label wreck.

STEP	PROMPT	REPLY	ACTION/NOTE	NEXT
2000	LINE FEED,	1	One line feed	-
	PAPER LOAD,	p		2010
	TEST	t	Print dummy label	-
	ESC	ESC	To leave routine	340
2010	HIT SPACE BAR TO START AND STOP		Mechanism operates automatically	2000

The chemist may continue with this routine until the dummy print is correct and can only exit by pressing ESC.

Recognised Abbreviations

General

MPU 3 is preferably programmed to recognise certain abbreviations input from the keyboard; the number of recognised abbreviations may vary. Some of these are printed in full on the label and some cause special

Source

A single character abbreviation is used for this value, as follows:

Value Typed	Meaning	Value Recorded
G	G.P.	1
H	Hospital	2
D	Dentist	3
P	Private	4
O	Other	5

Authority

This represents the status of the writer of the prescription and also whether or not it is exempt from charges. The values are as follows:

Value Typed	Meaning	Value Recorded
P	Professional	1
A	Ancilliary	2
O	Other	3
P/E	Professional/Exempt	6
A/E	Ancilliary/Exempt	7
O/E	Other/Exempt	8

Drug on Label

If an abbreviation is entered, then this is compared with a table of the most frequently prescribed drugs which gives also the full drug name. The full name is printed and also recorded on the tape.

Embodiments may vary in the number of abbreviations which they hold in memory.

Form

The value recorded on the tape is a two digit number corresponding to the position of the Form in the list (e.g. Aerosol is 00, Cream is 05).

Dosage

Dosages are entered as a mixture of standard abbreviations and free text. The abbreviations follow the latin commonly used by doctors when specifying prescriptions.

Any free text included in the typed dosage string is not recorded on the tape.

CLAIMS

1. A combined data logging and label printing device in the form of a self-contained unit which has a computer processing unit programmed for interacting with the user to set up the date for a particular label to be printed, a printing arrangement for printing the labels and a data logging arrangement for storing data relating to each prepared label in a non-volatile memory.

2. A device according to claim 1 and which comprises a keyboard for enabling the user to enter data for the preparation of individual labels and instructions to the processing unit and a display for verifying entered data.

3. A device according to claim 2 wherein the display is arranged to be driven by the processing unit which is programmed to display prompt and/or other interactive messages to the user.

4. A device according to claim 1, 2 or 3 wherein the printing arrangement comprises a pair of printers for printing labels from respective supplies of label stock, in use individual labels being printed on a selected one of the printers.

5. A device according to claim 4 wherein the printers are arranged to dispense the printed labels exteriorly of the unit.

6. A device according to claim 4 or 5 wherein the processing unit is programmed to have a default mode whereby label printing will take place via one of the printers unless the user specifically instructs that a particular label is to be printed on the printer.

7. A device according to claim 6 wherein the processing unit is programmed so that the printer to be used for default printing can be selected during a start-up routine.

8. A device according to any one of claims 4 to 7 wherein each printer is a sprocket fed, impact printer.

9. A device according to any one of the preceding claims wherein the processing unit is programmed to accummulate data relating to printed labels and temporarily store it in RAM and to periodically dump the accummulated data to the non-volatile memory.

10. A device according to any one of the preceding claims wherein the non-volatile memory is a digital micro-cassette.

11. A device according to any one of the preceding claims wherein the processing unit is programmed to prepare statistics relating to printed labels and to display the prepared statistics

12. A device according to claim 11 wherein the processing unit is programmed to output the prepared statistics via the printing device.

13. A device according to any one of the preceding claims wherein the processing unit is programmed to recognise abbreviations in data input by the user and to replace the abbreviation by data stored relating to the abbreviation.

14. A combined data logging and label printing device constructed and arranged to operate substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

15. A device according to any one of the preceding claims when programmed for the preparation of labels for items dispensed by a pharmacist and/or chemist.

Printed for Her Majesty's Stationery Office, by Croydon Printing Company Limited, Croydon, Surrey, 1983.
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.

SYSTEM FOR PRINTING PRESCRIBED ITEM IN ELECTRONIC COMPUTER FOR MEDICAL OFFICE WORK

Patent Number: JP3031965
Publication date: 1991-02-12
Inventor(s): NISHIMURA TOSHIO
Applicant(s): SANYO ELECTRIC CO LTD
Requested Patent: ☐ JP3031965
Application Number: JP19890166129 19890628
Priority Number(s):
IPC Classification: G06F15/21
EC Classification:
Equivalents:

Abstract

PURPOSE:To dispense with the collation work of a chart, a prescription, etc., by simultaneously printing a prescribed item and, in addition to it, the relevant information in respective kinds of data inputted from an input means such as a keyboard to a printing paper with a printer.
CONSTITUTION:One prescription in patient data is read from the patient data file stored in an external memory 4, fetched in an internal memory 3 and displayed on a CRT 5. When the data are drug data, the drug name, giving quantity and unit, and further, information to express a taking way, etc., are read as to the individual drug in one prescription, they are fetched in the internal memory 3, and these pieces of information are all printed on a drug bag label, etc., for printing provided as a printing paper 7. Thus, the necessity to transcribe the contents of the chart or prescription, etc., by a medical facility side at a drug giving window, etc., and to execute the collation and confirmation works one by one can be eliminated.

Data supplied from the **esp@cenet** database - I2

⑲日本国特許庁(JP)　⑪特許出願公開

⑫公開特許公報(A)　平3-31965

⑤1Int. Cl.⁵	識別記号	庁内整理番号	㊸公開　平成3年(1991)2月12日
G 06 F 15/21	360	7165-5B	

審査請求　未請求　請求項の数 1　(全3頁)

㊹発明の名称　医療事務用電子計算機における所定項目印字方式

㉑特　願　平1-166129
㉒出　願　平1(1989)6月28日

㉒発明者　西村　寿夫　大阪府守口市京阪本通2丁目18番地　三洋電機株式会社内
㉑出願人　三洋電機株式会社　大阪府守口市京阪本通2丁目18番地
㉔代理人　弁理士　西野　卓嗣　外2名

明　細　書

1．発明の名称

医療事務用電子計算機における所定項目印字方式

2．特許請求の範囲

(1) 各種のデータを入力する入力手段、該入力手段によって入力されたデータを処理する情報処理部、該情報処理部によって得られた出力データを表示する表示手段、前記情報処理部からの出力データを格納する外部メモリ及びプリンタを備えた医療事務用電子計算機において、前記入力手段から入力された患者データの中から所定項目に係わる情報を抽出し、前記所定項目に関連する情報と共に印字用紙に前記プリンタによって印字することを特徴とした医療事務用電子計算機における所定項目印字方式。

3．発明の詳細な説明

(イ) 産業上の利用分野

本発明は、内科及び眼科等の医院あるいは病院、歯科等で使用する医療事務用電子計算機において、特に診療後に投薬を行う場合の薬剤に係わる情報を薬袋ラベル等の印字用紙に印字する所定項目印字方式に関する。

(ロ) 従来の技術

一般に医院、病院において、患者の診療又は処方箋の受付に際し患者の氏名、保険証番号を含む患者データを入力し、その後その診療又は処方箋の内容に応じて投薬を行う。このとき、薬袋に対して直接薬袋へプリンタによって印字する場合、薬袋又は薬袋用ラベルへの印字情報から正確な投与内容は把握できず、薬の調剤や薬袋への収納作業時、常に処方箋(又はカルテ)との照合を行っており、また患者への投与内容の説明、指導時上述と同様常に処方箋(又はカルテ)との照合を行っていた。

(ハ) 発明が解決しようとする課題

前述の従来例では、薬の調剤や薬袋への収納作業時処方箋又はカルテとの照合が必要であり、また患者への投与内容の説明、指導時処方箋又はカルテとの照合が必要であった。そこで本発明は上

記欠点を除去した新規な所定項目印字方式を提供するものである。

(ニ) 課題を解決するための手段

本発明は、キーボード等の入力手段から入力された各種のデータのうち、所定項目に加えてその関連情報を同時にプリンタによって印字用紙に印字する構成である。

(ホ) 作　用

本発明では、投薬に対する薬袋又はラベル印字時に薬袋又はラベルに投与内容も印字されるため、従来のようにカルテ又は処方箋との照合作業が不要となり、また患者への投与内容の説明、指導時に上述と同様の照合作業が不要となって、作業ミスの減少と共に作業工程数の減少が図れる。

(ヘ) 実 施 例

図面に従って本発明を説明すると、第1図は本発明方式のフローチャート、第2図は同方式を説明するためのブロック図、第3図は同方式の一印字例を示す印字図面を示す。

図面において、(1)は種々の入力データ即ち患者の氏名、保険者証に基づく患者データ及び診療時の病名、診療方法、治療のための薬剤名、その説明に係るデータをキーインする入力手段としてのキーボード、(2)は前記入力データを一時記憶するバッファとしての内部メモリ(3)を有する情報処理部としてのＣＰＵ、(4)は前記ＣＰＵによって処理されたデータを格納する外部メモリ、(5)はデータ表示のための表示部として設けたＣＲＴ、(6)は出力データを印字用紙(7)に印字するプリンタ、(8)は入力部、(9)(10)は出力部を示す。

次に本発明の一実施例について説明すると、患者が医療機関において、診療又は調剤を受ける。このとき、患者固有のデータ即ち氏名、保険証番号、生年月日等をキーボード(1)よりキーインすると共に診療行為及び投薬に関するデータをキーインする。これらは、入力部(8)及びＣＰＵ(2)を経由して外部メモリ(4)に格納される。上記格納に際し、ＣＲＴ(5)の画面上でキーインデータを確認すると共にＣＰＵ(3)によってデータ処理された例えば診療点数に基づく診察料又は薬剤料が算出されてそのデータが所謂診療データとして外部メモリ(4)に格納される。

そこで第1図に示すように外部メモリ(4)に格納された患者データファイルからその患者データ内の1処方を読み出して内部メモリ(3)に取込み、ＣＲＴ(5)に表示する。この場合、前記処方に薬剤データか否かを判別して薬剤データであれば、1処方内の個々の薬剤について薬剤名称、投与量及び単位を読み出して内部メモリ(3)に取込み、更に上記処方中の薬剤について飲み方の情報があるか否かを判別し、あれば外部メモリ(4)内の変換テーブルより薬袋ラベル（第2図の例では印字用紙(7)として例示）に印字するため、飲み方を表わす情報を読み出して内部メモリ(3)に取込む。

更に飲み方についての指定や服薬時の注意事項等があれば、ユーザ定義のコメントを前述と同様に外部メモリ(4)内のファイルから読み出して内部メモリ(3)に取込む。上記情報を印字用紙(7)として設けた印字用の薬袋ラベルに投与内容を全て印字する。この例を第3図に示してあり、患者名に対して投薬に基づく投薬する薬剤名、飲み方を印字する。

上述の例では右欄に薬剤名（セレキノン錠等）、投与量（6錠）を示してあり、患者氏名の下側に飲み方「1日3回7日分（毎食後30分以内に服用して下さい）」なる記載の印字を行う。

以上の様に本発明の印字方式では、医療用電子計算機において、患者への投薬がある場合に患者データの中の氏名に加えて薬剤名及びその使い方に関する情報をも薬袋用のラベル等に印字する。

(ト) 発明の効果

本発明によれば、患者が医療機関で診療を受けた後に、投薬がある場合、薬袋の外側に患者氏名に加えて薬剤名を印字すると共にその使い方を併せて印字するので、従来に比べて投薬窓口で医療機関側がカルテ又は処方箋の内容を転記して逐一照合、確認作業をする必要がなく、作業能率が向上して患者の投薬窓口での待ち時間が極減でき、

本発明方式は医療機関に利用すれば、その効果は極めて大である。

4．図面の簡単な説明

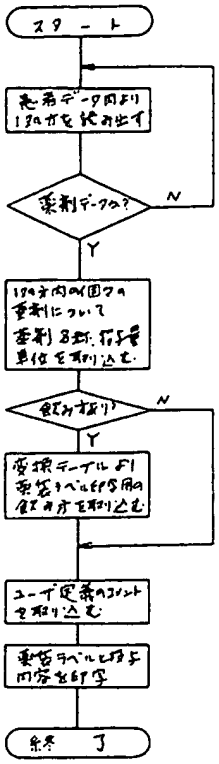
第1図は本発明の医療事務用電子計算機における所定項目印字方式を説明するためのフローチャート、第2図は同方式を説明するためのブロック図、第3図は同方式の一実施例を示す印刷状態図である。

(1)…キーボード、　(2)…ＣＰＵ、　(3)…内部メモリ、　(4)…外部メモリ、　(5)…ＣＲＴ、(6)…プリンタ、　(7)…印字用紙。

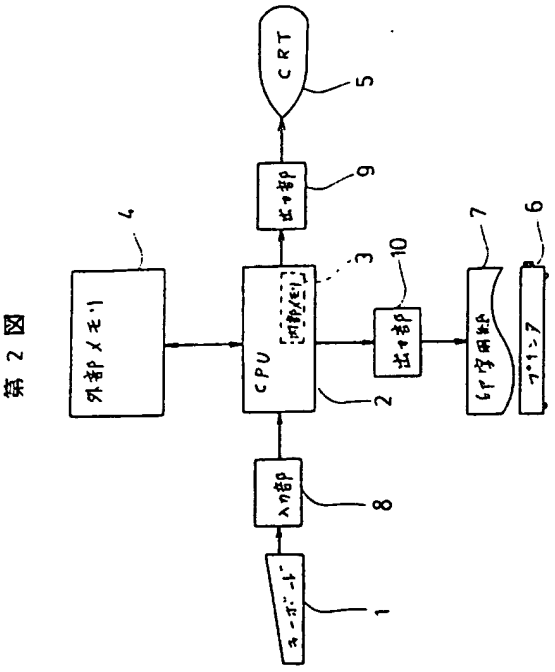
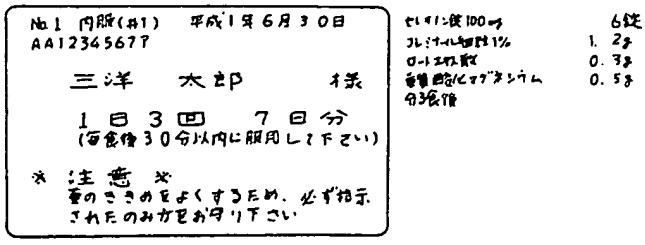
出願人　三洋電気株式会社

代理人　弁理士　西野卓嗣　外2名

第1図



第2図



第3図